
LYME DISEASE

Clinical Features: A systemic, tick-borne disease, almost never fatal, with manifestations affecting skin, nervous system, heart and/or joints. In early stages, 60%-80% of patients present with a characteristic “bull’s-eye” rash, erythema migrans (EM), accompanied by nonspecific symptoms such as fever, malaise, fatigue, headache, myalgia, and arthralgia. If untreated, some patients may develop arthritis; neurologic abnormalities, such as aseptic meningitis, facial palsy, nerve inflammation and encephalitis; and cardiac problems.

Causative Agent: *Borrelia burgdorferi*, a spirochete bacterium

Mode of Transmission: Maintained in the blood and tissues of small rodents and deer, the organism is transmitted by blood to feeding ticks, specifically the *Ixodes* species including the deer tick (*I. scapularis*) and the western black-legged tick (*I. pacificus*). During its feeding process, the infected tick will transmit the organism to humans and other mammals. Transmission occurs after ≥ 24 hours of tick attachment.

Incubation Period: After tick exposure, 3-32 days, with an average of 7-10 days.

Period of Communicability: Person-to-person transmission has not been documented.

Public Health Significance: A vaccine against Lyme disease was available in 2001, but has since been withdrawn by the manufacturer. The role of the health department is limited to providing education on the mode of tick transmission and means of personal protection.

Reportable Disease in Kansas Since: 1990

Clinical Criteria

- Erythema migrans diagnosed by a physician and defined by a single primary lesion ≥ 5 cm in size and/or the occurrence of secondary lesions, **OR**
- At least one late manifestation, as defined below, with laboratory confirmation of *B. burgdorferi* infection and without an alternate explanation found.
 - *Musculoskeletal system.* Recurrent, brief attacks (weeks or months) of objective joint swelling in one or a few joints, sometimes followed by chronic arthritis in one or a few joints. Manifestations not considered as criteria for diagnosis include chronic progressive arthritis not preceded by brief attacks and chronic symmetrical polyarthritis. Additionally, arthralgia, myalgia, or fibromyalgia syndromes alone are not criteria for musculoskeletal involvement.

- *Nervous system.* Any of the following, alone or in combination: lymphocytic meningitis; cranial neuritis, particularly facial palsy (may be bilateral); radiculoneuropathy; or, rarely, encephalomyelitis. Encephalomyelitis must be confirmed by demonstration of antibody production against *B. burgdorferi* in the CSF, evidenced by a higher titer of antibody in CSF than in serum. Headache, fatigue, paresthesia, or mildly stiff neck alone is not criteria for neurologic involvement.
- *Cardiovascular system.* Acute onset of high-grade (2nd-degree or 3rd-degree) atrioventricular conduction defects that resolve in days to weeks and are sometimes associated with myocarditis. Palpitations, bradycardia, bundle branch block, or myocarditis alone are not criteria for cardiovascular involvement.

Laboratory Criteria for Surveillance Purposes

- Isolation of *B. burgdorferi* from a clinical specimen, **OR**
- Demonstration of diagnostic IgM or IgG antibodies to *B. burgdorferi* in serum or cerebrospinal fluid (CSF). A two-test approach using a sensitive enzyme immunoassay or immunofluorescence antibody followed by Western blot is recommended.

Surveillance Case Definitions

- *Confirmed:*
 - A case with erythema migrans, **OR**
 - A case with at least one late manifestation (as defined above) that is laboratory confirmed.

2005 Kansas Count: 3

	<i>Rate per 100,000</i>	<i>95% CI</i>
Kansas Rate	0.1	(0.0 – 0.2)
U.S. Rate (2004)	6.8	NA

Three confirmed cases of lyme disease were reported in Kansas during 2005. Two of the cases were diagnosed with erythema migrans, the characteristic "bull's-eye" rash. Persons who do not develop erythema migrans often do not meet the strict definition for a confirmed case.

The three-year median for 2002-2004 was 4 cases.